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# (54) DOSAGE REGIMEN OF AN S1P RECEPTOR MODULATOR

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### (58) Field of Classification Search

None

See application file for complete search history.

# (56) References Cited

#### FOREIGN PATENT DOCUMENTS

EP	1905434 A1	4/2008
EP	1923058	5/2008
WO	WO03097028	11/2003
WO	WO2005/025553 A2	3/2005
WO	WO2006/058316 A1	6/2006
WO	WO2009155475 A1	12/2009
WO	WO2010075239 A1	7/2010

### OTHER PUBLICATIONS

Maritime. Medical News Today [online]; 2006; downloaded from < URL http://www.medicalnewstoday.com/printerfriendlynews.php? newsid=53054 > on Nov. 11, 2018; 6 pages. (Year: 2006).\*

Garber. Nature Biotechnology. 2008; 26(8): 844-845. (Year: 2008).\* Dowell, Scott F., and Joseph S. Bresee. "Severe varicella associated with steroid use." Pediatrics 92.2 (1993): 223-228.

Johnson "Etiology and Treatment of Macular Edema" American Journal of Ophthalmology, 2009;147:11-21.

Saab et al., "Reversible Cystoid Macular Edema Secondary to Fingolimod in a Renal Transplant Recipient", Arch Ophthalmol/vol. 126(No. 1) Jan. 2008.

Zuvich et al, "Genetics and Pathogenesis of Multiple Sclerosis", National Institutes of Health, Author Manuscript, 21(6), 328-333 (2009).

Multiple Sclerosis, Poster Presentations, 2008, vol. 14, p. S177. Budde et al., "First Human Trial of FTY720, a Novel Immunomodulator, in Stable Renal Transplant Patients", Journal of the American Society of Nephrology, 2002, vol. 13, No. 4, pp. 1073-1083.

Koyrakh et al., "The Heart Rate Decrease Caused by Acute FTY720 Administration Is Mediated by the Protein-Gated Potassium Channel IKACh", American Journal of Transplantation, American Society of Transplantations, 2005, vol. 5, No. 3, pp. 529-536.

Comi G. et al., "Phase II study of oral fingolimod (FTY720) in multiple sclerosis: 3-year resuPaylts.", Mult.Scler. Feb. 2010; 16(2): 197-207. [Epub Dec. 22, 2009 Abstract [on-line] [found on Sep. 10, 2014] (found in the Internet at: www.ncbi.nlm.nih.gov/pubmed/20028707)].

Kharkevich Pharmacology, M., Medicine, 1996, pp. 41 to 42 §6.A (English Translation ).

(Continued)

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# (57) ABSTRACT

The present invention relates to a dosage regimen of an S1P receptor modulator or agonist in the course of the treatment of patients suffering from an inflammatory or autoimmune disorder, for example multiple sclerosis. Specifically, the present invention relates to testing a patient for a history of infection and vaccinating the patient prior to administration of fingolimod or a pharmaceutically acceptable salt thereof at a daily dosage of 0.5 mg.

### 4 Claims, No Drawings